

Data Center Consolidation Plan



Report to the Joint Legislative Oversight Committee on Information Technology

Keith Werner
State Chief Information Officer
Department of Information Technology
August 2016

This page left blank intentionally

Contents

INTRODUCTION 4

Overview 4

Scope..... 4

Inventory 4

Consolidation Plan 5

Virtualization 5

Timeline..... 6

Conclusion..... 7

INTRODUCTION

This report is the follow-up response to SL 2015-241 stating "On or before May 1, 2016, the State Chief Information Officer shall report to the Joint Legislative Oversight Committee on Information Technology and the Fiscal Research Division on the number of physical servers eliminated across all departments as a result of data center consolidation and the savings associated with such elimination." This report will illustrate the work performed over the last 5 months to meet the intent of SL 2015-241.

Overview

This report provides an updated inventory of the data centers in the executive branch, a list of agencies that are in and out of scope, an updated inventory of servers across non-DIT departments, progress on DIT's storage and hosting analysis, progress on DIT's consolidation plan, DIT's updated timeline, and an updated inventory of servers housed within DIT datacenters.

Scope

The agencies in scope are the participating agencies as defined in SL 2015-241.

- (1) Department of Natural Cultural Resources (DNCR)
- (2) Department of Health and Human Services (DHHS)
- (3) Department of Revenue (DOR)
- (4) Department of Environmental Quality (DEQ)
- (5) Department of Transportation (DOT)
- (6) Department of Administration (DOA)
- (7) Department of Commerce (DOC)
- (8) Governor's Office.
- (9) Office of State Budget and Management (OSBM)
- (10) Office of State Human Resources (OSHR)
- (11) Office of the State Controller (OSC)

The Department of Public Safety (DPS) and Community College System Office were invited to provide their data center information. DPS responded and the Community College System Office declined to respond but participated in the discussions.

Inventory

DIT refreshed the inventory completed in December 2015. 71 physical servers were eliminated across all departments as a result of data center consolidation efforts.

Non-DIT Servers	Dec 2015 Totals	May 2016 Totals	Change
Physical Servers	1138	1067	-71
Virtual Servers	2347	2261	-86
Total Servers	3485	3328	-157

These numbers reflect a generous reduction in physical servers in just over 6 months of time.

The Department of Commerce is actively planning for moving their servers into DIT datacenters. The progress to-date contributed in a small reduction of physical servers. Once the plan is fully executed, we expect the conversion of 15 servers to 5 virtual servers, all housed within DIT datacenters.

Additionally, the Department of Labor (DOL), which was not included in the original scope of this report, is consolidating all of its servers into DIT datacenters and expects to be complete in July. The result is transferring 24 servers into 17 virtual servers. DOL was able to eliminate five additional physical servers. Since this was out of scope of both reports, these numbers are not reflected in the inventory. However, DIT felt that the DOL efforts should be included, as this is not a simple project, and the transition has been very successful.

Consolidation Plan

In response to North Carolina Session Law 2015-241 establishing the Department of Information Technology as a cabinet level organization, the DIT Transition Program Office (TPMO) was created to ensure the goals and objectives set by the Governor and Legislature are met. The TPMO manages the projects created under the One IT Transition Program or Transition Team, which manages the transition of DIT from the current IT organizational entity to the One IT vision organization.

The server consolidation plan logically rests with the Transition Team. The information gathered for this report was provided to the Transition Team where the planning and execution efforts will continue.

Virtualization

Server virtualization refers to the creation of one or more virtual servers on a physical server. These virtual servers act like real servers but share resources of the physical server. One physical server could run three virtual servers where each virtual server is running a different operating system, like Windows and Unix. This means instead of buying three physical servers, one physical server could be purchased and do the work of three servers.

The target percentage for server virtualization is 80%. There has been modest progress in increasing virtualization percentages over the last five months. DIT expects this progress to continue to move forward but at a slow pace. The transition process will include transforming requirements into a solution, not just a one-for-one server swap. This will increase the state's overall virtualization ratio. The virtualization percentages are provided in the table below.

Virtualization	Dec-15	May-16	Change
-----------------------	---------------	---------------	---------------

DIT Virtualization	62%	64%	2%
Non-DIT Virtualization	67%	68%	1%

Timeline

DIT provided an activity timeline for the previous report and the updated timeline is in the chart below. All of the efforts are moving forward, the most significant information is that the DIT Transition Team will absorb many of the lines of effort in the natural progression of that program.

Data Center Consolidation Plan				
Activity	Work Explanation	Expected Result	Status	Date
Application Review	Determine what is on each server	Application Inventory	Application inventory is scheduled towards the end of the DIT Transition Program's plan as it is a very complex and time consuming effort. Additionally, an architecture repository program is underway to capture enterprise application data that utilizes data from this report, the EADS project, the Application Portfolio project and the data classification project.	Complete
	Categorize (quick win, early consolidation - short term, phased consolidation)	Quick Win* List for early execution (list should also include a server virtualization list and schedule, if applicable)	The quick win list was drafted and execution in progress. Many quick wins were paused to determine budget issues and overall direction of DIT Transition Program. However, the Dept of Commerce was a quick win expected to complete in third quarter.	Complete
	Review should also include retirement opportunities, consolidation opportunities through EADS and MS Server 2003 project	Other category lists for risk assessment	EADS project resulted in multiple servers transferred to DIT and MS Server 2003 reduction is expected to be down from 450 to 70 by July.	Complete
Server Virtualization	DIT data center will complete virtualization efforts	80% virtualization, Server Reduction	DIT virtualization increased 2% to 64%; Non-DIT virtualization increased 1% to 68%	Requires extended timeline

Quick Win Execution	Use Quick Win list to begin consolidation efforts	Server Reduction	Server consolidation efforts in-progress with Dept of Commerce. DIT Transition Team will absorb this effort and create the larger consolidation plan	3/1/2016 - 9/1/2016
Risk Plan	Assess risks for non quick win categories by documenting the risks and risk mitigation strategies)	Risk Mitigation Plan that includes any medium or high security implications and customer impact.	This effort is in-work and will move to the DIT Transition Team for further development	2/1/2016 - 6/1/2016
Resource Planning	Partner with agencies to determine resource availability for prioritization of data centers	Priority list of data centers to consolidate	The DIT Transition Team will incorporate the resource planning function into the larger transition effort.	1/1/2016- 6/1/2016
Scheduling	Using application review, risk plan, and resource plan to develop detailed schedule	Detailed schedule	The DIT Transition Team will develop consolidation schedules	3/1/2016 - 9/1/2016
*Quick win = low risk, minimum or available resources, existing hardware				

Conclusion

DIT has multiple lines of effort to transition and consolidate servers within the state. The Transition Team is planning the execution of many of these efforts as part of the overall DIT Transition Program. Agencies outside DIT are slowly reducing their server counts, most importantly they are reducing their physical server counts through virtualization of existing servers and using virtualized servers when adding new business. This trend will continue and accelerate as the DIT Transition Team increases the pace of planning and consolidating agencies into DIT. In addition, the realized savings will be tracked in the Transition program as larger data centers consolidate in the fall of 2016.